The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 10. MARCH 8, 1941. VOL. 53.

SPRAINED TENDONS AND THEIR TREATMENT

SIR ARTHUR OLVER

I have been much interested in the correspondence on the above subject which has appeared recently in the *Veterinary Record*, and feel that some of my experiences in this connection may be of value.

In 1902, shortly after the conclusion of the South African war, I took over a veterinary hospital through which large numbers of animals had been passed during and after the war, and in a paddock set aside for the purpose I found about 120 animals, described as chronics, which in the great majority of cases had suffered from severe sprains of the tendons.

My predecessor, while he usually applied one or two blisters, had more faith in prolonged rest than in the firing iron for the treatment of such cases, and his system had been to blister and turn the more severe cases out for prolonged rest and gentle exercise in this paddock. The animals were examined at regular intervals, and any that had become sound were taken up for exercise and returned to work. Most of the less severe cases, no doubt, had become sound, but the hospital records showed that a number had been in the paddock considerably more than a year and the majority for some months, and all but a very few were still lame when I examined them.

Knowing from my Army experience that it was always difficult to obtain authority to cast an animal for such lesions until it had been subjected to what was known as active treatment, *i.e.*, firing, and being under instructions to dispose of all surplus animals by sale or slaughter, as quickly as possible, I fired the great majority of these cases, lightly but closely, and had them repeatedly blistered. The after-treatment usually consisted of hot and cold water applications, massage and graduated exercise on the lines that I had learnt from my uncles and from the late Professor James MacQueen. If this treatment is carefully carried out there should be little or no blemishing, and in my experience the effects are far greater than can ever be obtained by blistering or any of the many forms of treatment without firing, which I have tried or seen tried.

I confess that when I undertook the treatment of the above cases I had little hope that the majority would become serviceably sound, but to my astonishment, after two or three months the great majority had become sound and were eventually got fit for sale as serviceably sound animals. Up to this time I had had an open mind as to the value of firing compared with blistering and other forms of treatment, but since then I have had many opportunities of seeing the results of this and various other remedial measures carried out by myself and other officers, and I remain more than ever convinced of the value of firing in such cases.

One case I remember particularly was a very valuable polo pony, the property of a well-known polo player. Shortly after my taking veterinary charge of the unit to which its owner belonged, this pony was brought to the sick lines with a note from the owner to say that he wished it destroyed, as he had given up hope of getting it sound. From the groom I learnt that this pony, which had been under treatment more than a year, but which had not been fired, was the owner's favourite pony and was considered by him to be one of the best polo ponies in the country. As it was still comparatively young, I examined it carefully to see what hope there might be of effecting a cure. The flexor tendons of one fore leg had been severely sprained and the leg was very much thickened above the fetlock, but there seemed to be no bony deposits or involvement of a joint and I came to the conclusion that with prolonged treatment on the above lines there was good hope of making the pony sound enough to play. Accordingly, I saw the owner and informed him that, in my opinion, provided he was willing to allow me to try further prolonged treatment, possibly extending to five months, there was a good chance of a reasonably satisfactory result. He thought so much of the pony that he readily agreed to this, and I therefore fired the injured leg at once and followed it up with repeated blisters, hot and cold water applications, and with graduated exercise whenever the pony could be moved without pain.

Some time later, before the after-treatment was concluded, I relinquished charge of the unit and did not see the case again for several months; but it was already going sound and the limb was very much reduced in size when I left, and I heard afterwards that it had remained sound and was in regular work.

The following year, at my annual inspection, I saw all the troop horses of the unit trot past and, not expecting this pony to go past with the troop horses, did not notice it until my attention was drawn to it by the owner. On examination I found that it was going perfectly sound, with very little thickening or blemishing of the limb, and I was informed that it was playing regularly and standing work well.

Moreover, in playing polo myself—which being a poor man I usually had to play on ponies with doubtful legs—I have on several occasions confirmed the value of such treatment for ponies which had previously been treated by blistering and prolonged rest. In short, I remain thoroughly convinced that one can

obtain results by firing which are not obtained by any other means that I have myself tried or seen tried by other officers in the course of my long Army experience. Further, my experience of the ability to stand severe strains of tendons which have been reduced to normal proportions by blistering and other treatment, without firing, has been disappointing.

As to the value of rest alone, I think I may fairly quote a remark which I have often heard made by my uncles that they had more trouble with hunters going lame while being summered than from actual sprains received in the course of hunting, and I think I might mention an unfortunate experience which I myself had in South Africa with three polo ponies of my own, which were considered at the time to be some of the best in South Africa. These ponies had been playing very fast polo on hard grounds for two seasons, almost without a break, and when I was transferred to Headquarters at Pretoria I decided to rough them up in loose boxes, on peat moss, to give their legs a rest. Some time later I was asked to play in a tournament, but on taking the ponies up to get them fit I found that during their rest all three had become lame, and though I tried every form of treatment, I was never able to play two of the three again and the third was never really sound.

In these cases the lameness was mainly due to bony deposits, not susceptible in my experience to any great improvement by firing, but the point I wish to make here is that I feel sure that had I kept these ponies in regular exercise and carried on the constant treatment with hot water compresses, massage, etc., which I have long been in the habit of applying to my own ponies after fast work, they would have remained workably sound.

Another experience which served to strengthen my views as to the danger of prolonged idleness and as to the inadequacy of blistering for the repair of severely strained tendons was the following.

In 1907, shortly after I had been appointed principal veterinary officer to the Egyptian Army, orders were issued that the Egyptian cavalry was to be heavily reduced in numbers. Consequently I personally examined every horse then in the Cavalry with a view to keeping the best and disposing of the less good. In carrying out this examination I was horrified at the condition of their limbs, particularly the flexor tendons and suspensory ligaments of the fore legs.

In a very high proportion the ligaments and tendons above and below the fetlock, frequently in both legs, were thickened to an extent which I have hardly ever seen in this country, and the majority of these were more or less lame, though they had been treated, usually by blistering without firing.

After making full inquiries as to the possible causes of the extremely unsound state of the tendons and ligaments of these animals I came to the conclusion that the main cause was that owing to the paucity of British officers then serving with the Egyptian Army and the necessity for every British officer to take extended leave in Europe every summer—to counteract the effects of the climate—it had been the custom to leave the Cavalry horses in the charge of comparatively junior native officers throughout the hot weather from April to October. These officers, possibly with the best of intentions and having great faith in the efficacy of Berseem (Egyptian clover) and restricted exercise to get the horses fat and sleek, carried out very little training and fed very large quantities of this clover (which has a very high water content) throughout the summer. Consequently, when the British officers returned from leave at the end of the hot weather, anxious to get on with winter training, the horses they had to deal with, though looking well, were in very soft condition.

Moreover, the ground over which they had to train was very treacherous sand, hard in places and soft in others, with very little to indicate the difference. Fast work over such land in any case puts a very severe strain on tendons and ligaments, and in the case of horses in soft condition the results were disastrous.

As the numbers were in any case to be heavily reduced, I was able to get rid of the great majority of the worst cases and, as necessary, the remainder were treated on the lines indicated above, with relatively satisfactory results. At the same time steps were taken to ensure that in future the horses of the Egyptian Cavalry would be properly exercised during the hot weather so that at the commencement of the training season they were fit to undertake fast work without undue danger of sprain of their tendons and ligaments, and the standard of soundness certainly was greatly improved.

My view in this connection is that stagnation of the circulation and a consequent tendency to extensive fibrous thickening or the formation of bony deposits are very real dangers which we have to face in ordering prolonged rest for animals which have been maintained at a high level of training and kept at hard work over long periods.

The above remarks apply essentially to light horses, doing fast work. Draught horses are seldom brought to the same standard of training or subjected to the same severe strains as hunters, polo ponies, race-horses and troop-horses commonly are.

MEAL FOR PEDIGREE PIGS

At a meeting of the Council of the National Pig Breeders' Association, held at Oxford, a report was presented on the Association's representations to the Ministry of Agriculture that breeders of pedigree pigs should be accorded special treatment in the distribution of meal.

The Ministry of Agriculture's reply stressed the importance attached to the use of swill and other waste products, adding that it was not the Government's intention at present to give preferential treatment to pedigree stock as regards feeding-stuffs supplies. If, however, the supply situation should deteriorate to such an extent that the present allowances for pigs have to be reduced, it was unlikely that the rations for pedigree animals would be affected by that further reduction.

It was agreed that the Association's efforts for special treatment should be renewed, as it was thought that the total quantity of meal involved would be relatively small.

Arising from a report of the Association's Scottish Committee the sum of £20 and two silver medals were voted for the encouragement of official shows and sales to be held at Stirling and Aberdeen.

The sum of £25 was voted to the Royal (Dick) Veterinary College Extension Fund.

* * * * *

Weekly Wisdom

The higher commander who goes to Field Service Regulations for tactical guidance inspires about as much confidence as the doctor who turns to a medical dictionary for his diagnosis.—General Wavell.

Science, National and International, and the Basis of Co-operation*

DR. A. V. HILL, M.P.

I should be the last to claim that we scientific men, as a class, are less liable to prejudice on grounds of self-interest, race, politics or religion than other educated people; and we should deceive ourselves, and perhaps some uncritical members of the public, if we were to assume (as some of us seem to do) that scientific eminence, or the scientific habit of mind, as such, or even scientific notoriety, give any special virtue to our opinions on more ordinary topics. It is, nevertheless, a fact that the nature of our occupation makes scientific men particularly international in their outlook. In its judgments on facts science claims to be independent of political opinion, of nationality, of material profit. It believes that Nature will give a single answer to any question properly framed, and that only one picture can ultimately be put together from the very complex jigsaw puzzle which the world presents. Individual and national bias, fashion, material advantage, a temporary emergency, may determine which part of the puzzle at any moment is subject to the greatest activity. For its final judgments, however, for its estimates of scientific validity, there is a single court of appeal in Nature itself, and nobody disputes its jurisdiction. Those who talk, for example, of Aryan and non-Aryan physics, or of proletarian and capitalist genetics, as though they were different, simply make themselves ridiculous. For such reasons the community of scientific people throughout the world is convinced of the necessity of international collaboration; has practised such collaboration for many years, indeed along the centuries; and has built up an elaborate system of congresses and unions of standards, units and nomenclature, and of abstracting journals, together with a widespread interchange of research workers and ideas from one country to another.

In no other form of human activity, therefore, has so complete an internationalism spread throughout the national structure of society: in no other profession or craft is there so general an understanding or appreciation of fellow workers in other parts of the world. This implies no special merit or broadmindedness on the part of scientific men; it is their very good fortune, a good fortune which involves obligations as well as privileges. For example, when the Nazis in 1933 began their persecution of Jews and Liberals in Germany, it was the scientific community in many other countries which came most quickly to the rescue of their colleagues: not out of any special generosity but because *firstly* they had personal knowledge of those who were being persecuted, and *secondly* they realised that such persecution struck at the basis of the position of science and scientific workers in society. Again in the treatment of aliens in this country during the present war, the scientific community more than any other, and quite regardless of political complexion, has stood for a liberal and reasonable policy: desiring both to maintain the high tradition which the world of learning has inherited from the past, and also to make use of the willing help of people whom it knew personally to be loyal to the cause of freedom for which we are fighting. Again, in the United States to-day there is no section of the public so unanimously concerned for the victory of British arms as the community of university and particularly of scientific people. These realise that the basis of all progress in science and learning is international co-operation, and they cannot conceive how such co-operation could be possible under a Nazi domination of the world.

It may well be, then, that through this by-product of international co-operation science may do as great a service to society (just as learning did in the Middle Ages) as by any direct results in improving knowledge and controlling natural forces: not—as I would emphasise again—from any special virtue which we scientists have, but because in science world society can see a model of international co-operation carried on *not merely for idealistic reasons, but because it is the obvious and necessary basis of any system that is to work.*

One of the great tasks lying before scientific people after the present war will be to rebuild, and to rebuild on a firmer and better foundation, the international scientific organisations which have come into being in the last 70 years, particularly during the present century. The earliest of these was the International Bureau of Weights and Measures, established in 1873. An International Geodetic Association followed, and in 1903 an International Seismological Association on the same lines. Arising from the initiative in 1898 of the Academies of Munich and Vienna, together with the Royal Societies of Göttingen and Leipzig, which had all been in the habit of meeting annually, the Royal Society (of London) undertook to approach a number of foreign academies with a view to the formation of an international association of academies. As an independent institution, not subject to State control as were so many of the academies, the Royal Society was in a very favourable position for opening such negotiations. As a result the International Association of Academies was formed, which held five meetings in all, the sixth at St. Petersburg being cancelled owing to the outbreak of war in 1914. It never met again.

These meetings were not limited to natural science, many of the academies being concerned both with the scientific and the humanistic side of learning. It is interesting that as one result of this movement, and in order to represent Great Britain on the literary, philosophical and historical sides, the British Academy was formed and incorporated by Royal Charter in 1902. We of the Royal Society have always hoped that the British Academy will ultimately take the same place in national life in respect of humanistic studies, as the Royal Society has long had in respect of "natural knowledge." There is need for such independent bodies of high standing and disinterested outlook, particularly when so many functions are being taken over, often quite suddenly and without anyone noticing, by the State. The Royal Society, in spite of its independence, has always, since its foundation in 1662, had close relations with the Government, and it would take a small book to recount the many occasions on which its advice has been asked. It has recently been given still another privilege and duty, under the Lord President, in advising the War Cabinet on scientific matters through its President and Secretaries, who are members of the Scientific Advisory Committee. One hopes that in some form or other, this function, no less necessary in peace-time, will continue after the war. *Could not a similar provision be usefully made now for those complementary studies which the British Academy represents?* This is an interpolation, not strictly relevant to the thesis of this address, but I feel it is of some importance. The reconstruction of

*Given at the Annual General Meeting of the Parliamentary and Scientific Committee, House of Commons, January 28th, 1941.

Britain and of our international relationships, in learning and the arts of peace, as well as in social and economic directions, is a matter of great concern about which we should be thinking already. In so doing a disinterested body of high standing such as the British Academy is, with no particular political axe to grind, might render the greatest possible service to the State. Science will have a special part to play, now and in the future, in national and international affairs, and it is right that independent science should have access to the chief centre of government. Other branches, however, of disinterested learning, have an equal if different application, and one would like to see for them a similar machinery created. Science is at last coming into its own in relation to social, national and international affairs. The older branches of learning, too long contemptuous, have begun to realise the situation: but that need not mean that social, historical, economic, literary and philosophical studies will have their influence diminished; only that the influence of learning as a whole will be increased.

To return to my story; just before the end of the last war, in 1918, representatives of the academies of all the allied countries met in London, and later in Paris, to discuss the formation of a new international scientific organisation. In July, 1919, the first General Assembly of the International Research Council, as it was to be called, met in Brussels. Representatives of the Central Powers were not invited, and a misunderstanding which then arose was made an excuse for declining an invitation which was sent to each of them a few years later. This unfortunate state of affairs persisted. German professors who feel themselves insulted are difficult people to appease, and indeed the fault was not all on their side. International Unions for Astronomy, Geodesy and Geophysics, Chemistry and Mathematics (this last no longer in existence) were formed; and at the next General Assembly in 1922, for Physics, Scientific Radio, Geography and Biology. Some of these unions have functioned well and have held important international congresses and done important work; others have done little. The ones that have worked best, *e.g.*, Scientific Radio, are those which had a more practical international task to fulfil.

The unions always had an official or semi-official flavour: official delegates, official hospitality, official finance, official business, have tended to put independent science into a somewhat subordinate position. Physiologists have held International Congresses for 50 years, and great value these have had, as we know, who have taken part in them: but physiologists have always insisted that they came as independent scientists, to meet, to hear and to discuss things with their colleagues; not as representatives of some State institution or interest. Other scientific groups have held similar informal congresses based on the same idea. There is grave danger, as was found by the Physiological Congress meeting in Italy in 1932, and in the Soviet Union in 1935, of a congress being used as an opportunity for political propaganda: in 1938 this was altogether avoided by the tact and understanding of Swiss colleagues, as it had been avoided at meetings prior to 1932. Political considerations are hard enough to avoid anyhow, but they are much worse if a congress is not genuinely independent.

In this country and America the great strength and the high position of the independent scientific societies make it easy for them to take charge of the proceedings of a congress, or of an enquiry of international importance, without danger of State control—either in appearance or reality. But this is not so easy, indeed it has been impossible in recent years, in many countries. In order to preserve the integrity of science in our own country, it is very important that those strong independent scientific bodies should be maintained; and for the sake of international scientific relations it is desirable that in other countries also, so far as we can influence them, the domination of the State over science should be tempered by public appreciation of the part played by independent scientific agencies and institutions.

In some form or other, not one may hope exactly in their present form, these International Unions must be started up again some day. This time, at any rate, we shall not be prevented from following our better judgment by the intransigence of French colleagues: though it may be hard enough for us this time to take a detached view. My own feeling is that in this matter we should rely, as far as possible, upon the help and advice of our American scientific friends. Their views about science, for its own sake and in relation to the State, are much the same as ours, and they (at present at least) are further from the battle. I know they would regard it as a sacred trust of friendship to bear a large part of the burden of starting off again the international co-operation in scientific endeavour which was so unhappily ended by the events of the last years.

In America, as in Britain, science is largely independent of the State. There, as here, great scientific organisations work under Government auspices: there, far more than here, the great corporations maintain their research departments: there, as here, free universities and free endowments are engaged in promoting the advance of scintific knowledge: there, as here, free and independent science is able to co-operate with the scientific agencies of government and industry, to the great advantage of all. There is a high idealism in America about international co-operation in the field of science and learning, and a very great regard for British science and British scientists. If the war goes ultimately as we expect, in the downfall of dictatorship and tyranny, it will our job to start off again, on broader and better lines, the complex system of international scientific co-operation: and in starting it off I am sure that we shall be able to call for the help and co-operation, without stint or limit, of our scientific friends in America.

I have spoken several times of the necessity of guarding the independence, the spiritual integrity of science. In many countries to-day science is wholly subservient to the State: its soul is not its own. I do not deny for a moment the importance, indeed the necessity, of scientific organisations within the framework of government, or of liberal support by the State of scientific research. One can only welcome such recognition by the public of the importance of scientific knowledge and scientific discovery—and ask for more. There are several things, however, which one may fear. *Firstly*, the condition of stagnation and complacency which tends to develop in any scientific department or establishment which is cut off from outside criticism or ideas: we have far too many examples of this already, formidable examples, and if we are not careful they will multiply; the reduction of science to official routine can be a real menace. *Secondly*, the danger that science will be planned by administrators in offices instead of by young men with their sleeves rolled up, in laboratories or workshops. *Thirdly*, the disadvantage of separating teaching from research, to the great loss of the next generation who may miss the inspiration of seeing discovery going on in the places where they are taught. *Fourthly*, a decrease in the

influence and prestige of those independent scientific bodies which play so large a part in the social and intellectual activities of the scientific community and provide the cross-connections between groups which might otherwise be isolated. *Fifthly*, the danger that he who pays the piper may call the tune, and that research may be required to be devoted primarily to objects which the politician, or the civil servant, regard for the moment as of national importance; or even—as in Germany and the Soviet Union—to bolstering up theories which the official philosophy of the State prescribes.

To avoid all these troubles, the independence and integrity of science must be carefully preserved; in the universities, in the learned societies, in the various associations or institutions devoted to the advancement of knowledge. Whenever State support is given, a buffer should be interposed, similar to that provided by the University Grants Committee between the universities and the Treasury. In our existing Research Councils (Department of Scientific and Industrial Research, Medical Research Council, and Agricultural Research Council), working with Government funds, the buffer is already provided by the fact that the members of the Councils are chiefly independent scientific men. The same safeguard exists at present with much of our State-aided research: we must carefully watch that the strength of this safeguard is fully maintained, that it does not become a formality, and that the principle is consciously extended wherever possible as the financial burden of scientific research and development is taken over (as is bound to happen more and more) by the State.

In many of the Departments of Government, however, notably those of the Defence Services, scientific research is undertaken, on a grand scale, which cannot be controlled directly by outside independent bodies. In these establishments particularly, the danger of stagnation and complacency exists. They are devoted to specific service purposes, often of necessity secret: and the condition of secrecy prevents them, in ordinary times, from attracting many of the ablest and brightest minds, who prefer the freer atmosphere of the universities, the possibility of discussing and publishing their results, and the recognition of their colleagues resulting therefrom. Consequently in war those who direct these establishments are often people who have arrived at their positions by seniority and long service, during which they have been largely isolated from the ideas and criticism of current scientific thought: it has been difficult for them not to become officials rather than working scientists. When an emergency occurs, as at present, numbers of able men come in, but to posts in which they can exert relatively little influence, and their ability and imagination may for long be imperfectly used. This indeed is inevitable under the present system, for they have at first no experience of service conditions and needs. After a year or two perhaps, longer than necessary, these able people find their proper level, but not until much damage has been done by lack of imagination and energy in the posts they might have filled before.

To avoid this trouble—and it is a very real one—two main principles may be applied. *Firstly*, to introduce into each department or organisation some kind of scientific advisory council, similar to that which on the whole works so well now in the Ministry of Supply. This council should consist partly of independent scientific men chosen for their special knowledge on the one hand, for their wide contact with the scientific community on the other: and partly of official scientific people representing not only the department or organisation itself, but a variety of other departments, so that a good cross-section of official knowledge and experience is available. And *secondly*, in ordinary times to arrange for regular interchange of personnel between the Government research establishments and organisations, and the universities and other independent institutions in which research is carried on.

I know that this second proposal will shock some of those who have lived in the traditional secrecy of service science: but it is right all the same. Why should not a chemist or mathematician from Woolwich, a physicist from Signal School, an engineer from the Royal Aircraft Establishment, go back as a lecturer or professor to a university, or to the research staff in a commercial laboratory; just as a physiologist from the National Institution for Medical Research, or an aeronautical engineer at the National Physical Laboratory, or a zoologist at the Marine Biological Laboratory at Plymouth may do? And why should not the research workers in Government laboratories be just as regular attendants at the meetings of scientific societies as those in other institutions? I sometimes thought, before the war, how good it would be to take a mission, harmonium and all, to one of the most important—and the most dead-alive—of these places and try to stir up a little general scientific enthusiasm.

It is difficult to get over vested interest and tradition in these things. As regards the first desideratum, that of an independent scientific advisory council within the framework of a Government organisation, from a department where it does not exist already we are apt to get the reply from the political head or the permanent secretary, "When we want scientific advice we can always go to Sir X. Y.," not realising that Sir X has sat in an office for years and that anyhow he cannot be knowledgeable on everything. Or we are told that the department has an excellent scientific organisation of its own, which has in fact gone on without any expert criticism for many years, saved indeed from criticism by its well-preserved secrecy. Or it is said, "When we want scientific help we can turn to the D.S.I.R., the M.R.C. or the A.R.C., as the case may be." Those excellent bodies can in fact do much, but they cannot do more for other departments than answer specific questions. A large part of scientific work lies in formulating the questions to be asked, and that cannot be done except by people who are in close personal touch with the actual needs. A family doctor, in fact, is wanted, to watch over the scientific health of the department: to call in a consultant alone at intervals is little use: the family doctor must be available to realise the need and to understand the situation of the patient—*then* the consultant's advice is valuable. The three research councils are to be regarded as consultants, excellent and essential ones; but they do not make it unnecessary to have independent advice within a department.

As regards the second desideratum, that of a free interchange of personnel, backwards and forwards between Government establishments and the universities and other outside scientific institutions, the first need is for a common pension scheme. All scientific workers, whether in the universities or in commercial laboratories, or in Government employment, should come under the Federated Superannuation System for Universities (F.S.S.U.) as do those employed by the three Research Councils (D.S.I.R., M.R.C., A.R.C.). Then the departments should insist on sending their people away at intervals, to carry on research elsewhere and to refresh

their souls in institutions outside. Conversely, the departments should invite outside scientists (naturally under proper safeguards of secrecy when necessary) to work for corresponding periods in their establishments. The advantage of this second step would be that the importance and interest of the problems which are being tackled in Government establishments would be more commonly realised, and better men would be inclined to take part in their solution. In the defence services a reserve of officers and other ranks is an essential part of an efficient organisation for war: in the scientific services similarly, a reserve of research workers, for the case of emergency of any kind, would seem to be equally essential. I am not thinking only of war: other emergencies occur requiring the sudden application of scientific knowledge and method. It would be simple and not very expensive to build up such a reserve of scientific talent, available for service when needed and in so doing to introduce a new spirit and a new outlook into Government scientific establishments.

One great advantage of working in the scientific establishments either of the Government or of a large company or corporation, is the fact that equipment is not limited below the minimum that is necessary for efficiency. In most of the free institutions money for research is notoriously short. One of the great needs of research is better financial support, and in the relative poverty of charitable people and bodies to which I fear we must look forward for some time, this support will have to come from the State. One hears proposals made for example for a national research council to be set up to administer grants for research. In considering such proposals we should be wise to remember three principles:—

(*a*) That a powerful buffer is required to prevent the State from interfering with the integrity and independence of research, and to save research from being over planned and directed by officials sitting in Government offices;

(*b*) That it is often better to ask existing and experienced agencies, which we know to work, to undertake new jobs, in spite, perhaps, of apparent imperfections in their organisation, rather than to allow our young revolutionaries to scrap the old and set up new schemes, cleaner on paper but untried;

(*c*) That the chief value of research grants will often be to young and comparatively unknown people, so that as far as possible devolution of allocation should be adopted, and the responsibility left to the university or other institution in which they work and where they are known.

For my part, as regards research in the universities, I should feel inclined, if a Government fund of, say, one million pounds were available for scientific research, to ask the University Grants Committee to allocate it to different universities as they do the larger sum of two and a quarter million pounds of the Treasury grant. Each university would then deal with the disposal of the sum allotted to it, in much the same way as the Royal Society does with the Government Grant for Scientific Investigations; and as in the last few years the University of London has already done with a substantial fund which it has put aside for this very purpose from its own resources. It is true that, of the Treasury Grant of two and a quarter million allotted by the University Grants Committee, a considerable part goes ultimately to research: or at least to maintaining the people and the institutions by whom and in which research is done. I know, however, from long experience, both personally and by helping to administer the Royal Society grant, the great advantage to the individual and to the institution where he works, of the possibility of obtaining a grant, possibly large, more often small, for a specific research project; to be expended by the young research worker (or the older one) at his discretion and not merely by the department. What the University of London has made a start in doing in this way, following on the example of the Government Grant for Scientific Investigation, administered by the Royal Society, can be done by other bodies: but money will be required. In the days of straitened circumstances which we cannot but foresee ahead, it must come from the State if scientific investigation is to be kept up—as it must be; and the natural body to allocate it to its different claimants among the universities would be the University Grants Committee. In this way we could avoid creating new and untried machinery.

For research in industry, in medicine and in agriculture (apart from their overlap with university institutions) the machinery for similar grants exists already in the three Research Councils: with extended financial provision from the Treasury if necessary. In industry at least part of the sum required should be subscribed by the industry itself, as it is at present with the Research Associations devoted to various subjects and working in co-operation with the D.S.I.R. The personal grants given at present by the D.S.I.R. for researches "of particular timeliness and promise" are of great value and could with advantage be extended.

I have tried to cover a large field in a very short time, and have been forced to deal for the most part with principles rather than details. I have omitted all reference to the pay and status of scientific people: the people themselves and the conditions vary widely, and for some men too much security just as well as too little may diminish their usefulness and initiative. I have not referred to the question of grants for students training for research, or of provision for weeding out those who show no scientific capacity: nor have I even mentioned scientific education, which would require a lecture to itself. And lastly, I have not ventured to discuss how the scientific resources of the nation at war could be better utilised. That might involve, not only the usual items of criticisms and the usual items of defence which we have all heard, but also—if properly undertaken—an exposure of facts which must at present be kept secret and of difficulties due to the personal peculiarities of individuals. Unfortunately when science comes, as it must come in war, into direct touch with action, it finds itself thwarted by intrigue, upset by unscrupulous exploitation of social and political connections, surrounded by personal ambitions and jealousies. These provide no small part of the difficulty in the way of utilising our great scientific resources to the full. Blessed are they who remain innocently in their laboratories and grumble: for it is a thankless task to try to get things right.

One last word. In recent years a number of brilliant revolutionaries, filled with political zeal but without experience of affairs, have won great fame and applause by showing how science is going to change the face of society. The public is inclined to place these gentlemen on the same intellectual pedestal as Einstein, supposing that their science is as great as their chatter. The more responsible members of the scientific community are a little frightened by these activities—not because they grudge their colleagues their easy fame—but because the impression is put about that scientists as a whole claim

THE VETERINARY RECORD

March 8th, 1941.

A HAPPY EXTENSION OF R.A.V.C. ACTIVITIES

WE have learned with the greatest pleasure from the columns of our contemporary, *The Journal of the Royal Army Veterinary Corps*, the good news that, in accordance with a Special Army Order of January 8th, 1941, "The duties and functions of the existing Remount Service will be amalgamated with the Army Veterinary Service, and will be performed in future by the personnel of the Royal Army Veterinary Corps."

Most veterinarians now past the prime of life can look back with pride on some years of service with the R.A.V.C. during the war of 1914-18. Many were loath to sever the happy connection with the Corps, and stayed on in the post-war years as Territorial Officers, and later still became posted to its Reserve of Officers. In the years immediately preceding the outbreak of the present war it became obvious that, owing to the increasing use of mechanised vehicles in modern warfare, the horse could never again figure so prominently in the military machine. We even had apprehensions that the R.A.V.C.'s very existence as a Corps was in jeopardy. It is therefore to us, as it must be to all the small but highly efficient body of "Regulars" now serving in the Corps, a source of deep gratification that its functions have now become so notably enlarged and that previous duplication of duties now becomes unified under their immediate control.

The R.A.V.C. has vast resources of accumulated experience which will enable it not only to control disease and render expert treatment to sick and injured animals but to assert itself in the future supply, training and maintenance in health of all Army animals.

We must recognise, as will be seen when the story comes eventually to be told in full, that this happy consummation has been greatly helped by the confidence felt by the High Command of our Army in those who have administered and steered the Corps during recent difficult and disheartening years, and who have refused to allow its traditional efficiency to be abated in the smallest degree.

There is a political lesson for us too in such an event as this we now chronicle. It adds yet another example that veterinary services whether civil or military, yield the best fruit when the animal in health and disease is controlled—as it usually is abroad—by a veterinary administration, *pur sang*. It becomes increasingly obvious that a flourishing pastoral industry requires the aid and advice of a strong independent veterinary administration in its own right at the elbow of responsible ministers of the state concerned. It is not a little Gilbertian that this country, the home of the world's choicest breeds of livestock, should be the last to accord to our profession the position in pastoral problems that it holds with such brilliant success in every other country.

to be allowed to dominate policy: and so, resistance is aroused to their more modest suggestion that they ought to be consulted. If these remarks should reach the ears of those on whom the task of formulating public policy falls, they can be reassured. The majority of scientific men are quite reasonable and have no grandiose ideas. We know our own limitations—as we are well aware of yours. All we ask is that we should be considered as equals in a common task—not merely as superior technicians paid to dish up the magic which you order.

CLINICAL COMMUNICATIONS

A Series of Cases of Poisoning in Cattle*

G. EATON, F.R.C.V.S.
HALLATON, MARKET HARBOROUGH

Poisoning of Cows by Dog's Mercury

(1) About a month ago I was asked by a neighbouring veterinary surgeon to go and look at a case for him. Two cows were dead and two more were ailing. Blood smears from the two dead cows were negative for anthrax. The two ailing cows showed marked dullness and very jaundiced membranes. On questioning the owner I found out that owing to the extreme shortage of grass this herd of cows had frequently, during the previous two or three weeks, broken into a nearby wood. I visited the wood and found that large areas of it were covered by a green plant 6 or 8 inches high, and with oval leaves: it was apparent that considerable quantities of it had been eaten. Specimens were taken and on showing them two days later to Mr. Ironside, M.R.C.V.S., of the Midland Agricultural College, when he came to see me on another matter, he immediately identified them as Dog's Mercury. According to Lander's Toxicology, the active principle is a volatile basic oil, mercurialine, which is a narcotic poison, thus accounting for the extreme dullness of the two ailing cows. These two cows recovered with appropriate treatment, viz., the administration of stimulants—spirits ammon. aromat. and spirits ether nit., each in ounce doses, being given twice daily.

* * * * *

A Case of Yew Poisoning in a Heifer

(2) Three weeks ago I was requested to see a three-year-old Shorthorn heifer which was apparently normal when seen at 8.30 a.m., and was found dead about mid-day. Blood smears were negative for anthrax. I then discovered that the previous evening a friend of the owner, who lived opposite the field in which the heifer was, noticed a gap in the hedge.

*Reported to the meeting of the Lincolnshire and District Division, N.V.M.A., held at Lincoln, October 24th, 1940.

In a desire to prevent her getting out he cut a branch from a yew tree in his garden, and pushed it into the gap. On examining this branch I found ample evidence of a considerable quantity having been eaten. At the joint request of the owner and his friend, I made a *post-mortem* examination on the heifer, and on my certifying that death was due to yew poisoning, the friend compensated the owner in full for his loss.

* * * * *

Suspected Poisoning of Bullocks by White Mustard

(3) My third and last case occurred last Saturday morning, October 19th, and concerned three three and a-half-year old Irish bred Hereford bullocks, out of a lot of 23, costing £28 each, which were found dead that morning without having been noticed ailing in any way. It was obvious in each instance that death had been very sudden, and had occurred without a struggle, and two of the beasts had dropped so violently that their horns were stuck in the ground. Blood smears in each case were negative for anthrax, and at the request of the owner I made *post-mortem* examinations of all three animals the next day.

These beasts had only arrived from Ireland on the previous Monday, and on the Tuesday morning were put on to an 11-acre field of mustard stubble, and 48 acres of grass. The mustard was of the white variety, and some five or six weeks earlier, when just coming into flower, it had been stocked with about 150 sheep which had grazed it down to within a few inches of the ground, without untoward effects. The bullocks were then put on in an endeavour to graze off more, so that as little as possible would be left to plough in again.

In each instance *post-mortem* examination revealed the rumen to be packed entirely with the coarse fibrous stalks of mustard stubble, and the lining membrane was very easily detached—more so than usual. Each also showed an inflammation of the fourth stomach, a patchy inflammation of the small intestines, and some congestion of the lungs. This combination of conditions, to my mind, clearly pointed to an acute type of poisoning, and I am of the definite opinion that it was due to the bullocks having gorged themselves on mustard, since their stomachs contained nothing else. Mustard poisoning is fully dealt with in Lander's Toxicology, and is stated to be caused by the volatile mustard oil which is present in the plant. White mustard is stated to yield oxybenzyl sulphocyanide; it is therefore easy to understand why sudden death would ensue if a sufficient concentration were obtained.

This case is unique in my own personal experience, and I should like to ask if the poison is present in greater degree low down in the plant, or is there some other explanation why the sheep fed on it earlier suffered no ill effects? I should also mention that the sheep also had access to the 48 acres of pasture land.

The export of pedigree British livestock as a source of revenue to this country is to be developed and encouraged by a new "export group" to be helped by the official blessing of the Board of Trade and to be representative of all contingent interests—exporter and breeder. The motive is to leave no stone unturned to keep this side of the stock-breeding business free to continue, despite such serious hindrances as the shortage of shipping space.

ABSTRACTS

[GLUCOSE TOLERANCE IN HORSES. Link, R. P. (1940.) *J. Amer. vet. med. Ass.* **97.** 261-2.]

Glucose is a valuable medicinal food, but there is little information in the literature about the amount of glucose that can be given to horses without exceeding the "renal threshold." The author studied the amount of glucose that could be given intravenously only, taking into account "the functional capacities of the liver and pancreas" and the fact that horses in poor condition had a lower initial blood-sugar level, so that more glucose was needed to raise the blood-sugar concentration to the threshold. References are given to previous work showing that glucose given to cows by stomach tube produced the greatest increase of blood sugar at about the fourth hour after the glucose was given, this increase lasting more than 24 hours, and that the "renal threshold" for blood sugar in dogs was about 200 mg. per 100 c.c. of blood, at which level there was an excessive amount of sugar in the urine.

The author used nine horses of widely varying weights, aged from 2 to 17 years. He says that these variations tend to "vary the uniformity" of the results, but that the clinician finds similar variations in his patients. The horses received hay and grain twice a day. Glucose, prepared from anhydrous glucose and distilled water, was sterilised by autoclaving, the doses being injected into the jugular vein by gravitational force which could be regulated at will. The blood samples, citrated and sterile, were collected before the glucose was given and at 5, 15, 30 and 60 minute intervals after the completion of the injection. A catheter left in the urethra kept the bladder always empty and the amount of urine secreted every ten minutes was measured to find out whether the glucose was diuretic. Blood-sugar determinations were made by the Shaffer-Hartmann-Somogyi method. Fehling's copper reduction test was used as a qualitative indication of sugar in the urine and samples containing reducing sugars were quantitatively analysed, a standardised Fehling's solution being used for this.

Before glucose was injected, the nine horses showed a mean variation of blood sugar of 36·13 mg. per 100 c.c. of blood, a wide variation; but one horse was 17 years old and in poor condition and showed a low reading of 66·58 mg., while a two-year-old colt in good condition showed a high reading of 102·71 mg. The average reading for the group was 82·67 mg. per 100 c.c. of blood.

After the injection of 50 grammes glucose the average rise in blood sugar five minutes after the injections were completed was 21·12 mg.; after 75 grammes of glucose it was 55·02 mg.; after 100 grammes glucose given to some of the horses only, it was 101·28 mg. An average of 15 minutes was required to make the injections.

The greatest increase of blood sugar occurred five minutes after the completion of the injection; this was followed by a gradual decline, although at the end of 24 hours the blood sugar was above the reading before the injection. Although more glucose was needed to reach the "renal threshold" in an emaciated horse in poor condition, the "renal threshold" seemed to be at about the same level in all the horses, whether they were in good condition or not. In these

experiments the " renal threshold " for blood sugar in the horse was about 150 mg. per 100 c.c. of blood. When the blood sugar was raised just above this, a trace of sugar appeared in the urine. In one horse the blood sugar was 151·15 mg. after 75 grammes glucose had been injected and a slight trace of sugar appeared in its urine. Injection of 75 grammes of glucose did not produce " any marked diuretic effect, ' but larger amounts had " more effect as a diuretic."

The author adds that he did not determine whether similar results would be obtained in diseased animals.

Rapid administration of comparatively small amounts of glucose will cause a temporary hyperglycaemia and glycosuria. The excess of glucose is normally converted to glucose and stored in the liver and muscles, so that the rate of conversion is limited and the body may be temporarily unable to convert even small amounts rapidly administered. Only a small amount of the blood taken to the heart by the anterior vena cava (into which the injected glucose goes *via* the jugular vein) goes through the liver before it reaches the systemic circulation and this may explain why the " renal threshold " is exceeded, with resultant glycosuria, by comparatively small amounts of glucose given intravenously into the jugular vein.

G. L.

* * * * *

[" SWAYBACK ": A DEMYELINATING DISEASE OF LAMBS WITH AFFINITIES TO SCHILDER'S ENCEPHALITIS IN MAN. Innes, J. R. M., and Shearer, G. D. (1940.) *J. comp. Path.* **53**. 1-41.]

A brief but comprehensive summary of the demyelination diseases as they affect the human being is given and the analogous conditions in animals are considered. These include a disease resembling Schilder's encephalitis which has been described in monkeys, a type of encephalo-myelitis in dogs (" post-distemper " encephalitis), an " anti-rabic encephalitis " in dogs and " swayback " in lambs. The authors believe that " swayback " has most resemblance to the demyelination diseases of man, especially Schilder's encephalitis.

Although the first record of the disease in Britain was made in 1932 it would seem evident that it has been known for some generations. A similar condition in lambs has been met with in Sweden, South America, South Africa, India, Australia and New Zealand.

The majority of cases are affected at birth but some may not show symptoms until a few weeks old. Whatever the time of onset the clinical signs are the same, namely, inco-ordination of movement with a spastic paralysis of the hind limbs, sometimes blindness, and a progressive course with generally a fatal termination. A certain proportion of mild cases survive and when bred from later may give birth to healthy lambs. It is more common for older ewes to give birth to affected lambs but ewes of any age may produce cases. Ewes which have produced " swayback " lambs one year may give birth to either affected or healthy lambs the following year. The condition has been seen in lambs of all well-known breeds and their crosses.

Post-mortem examination shows that the pathological changes are confined to the nervous system. Gross changes in the brain may be expected to be found in about two out of every three cases. These changes are confined to the cerebrum and consist of a diffuse degeneration of the white matter which may be replaced by a greyish gelatinous substance or else may be completely liquefied. The most constant microscopical feature is demyelination and secondary degeneration of the motor tracts in the cord is always present.

No significant lesions have been found on pathological examination of ewes which have given birth to " swayback " lambs.

In consideration of the aetiology it may be said that attempts to isolate a causal organism have failed, attempts to transmit the disease to healthy animals have failed, and there is no evidence to indicate that the disease is hereditary. The authors of this paper give much consideration to the biochemical aspect of the condition, particular attention being paid to the role of lead and copper, but although much valuable work has been done no definite conclusions can yet be drawn. They draw attention, however, to the fact that the administration of copper to pregnant ewes has had a beneficial prophylactic effect in both Australia and Great Britain.

W. M. H.

* * * * *

[THE DIFFERENTIAL LEUCOCYTE COUNT. Scott MacGregor, R. G., Richards, W., and Loh, G. L. (1940.) *J. Path. Bact.* **51**. 337-368.]

The authors have made an exhaustive study of the sources of error in the common methods of performing differential leucocyte counts.

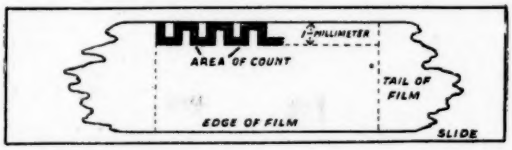
The following sources of error were investigated :—

(*a*) Variations in the method of taking blood for films.

(*b*) Variations in the method of performing the count.

The distribution of the leucocytes in different parts of the film was studied. There were marked variations in the distribution of polymorphonuclears and lymphocytes in different parts of the same film. Three common methods of performing differential leucocyte counts gave variations of over 20 per cent. in the same film.

The article is not one that lends itself to adequate summary, and it should be read in detail by those interested. However, the authors state that the method which gives the closest value to the count obtained by counting all the cells in a film is what they describe as the " battlement edge " count. This is best described by illustration.



D. L. H.

* * * * *

[HIPPELATES FLIES AS VECTORS OF BOVINE MASTITIS. Sanders, D. A. (1940.) *J. Amer. vet. med. Ass.* **97**. 306.]

A further contribution to the study of the transmission of mastitis by dipterous insects which follows the author's previous article (*Vet. Rec.* **53**. 15). Hippelates are the fruit fly or eye gnat and using the technique described in the previous article the species was shown to be capable of causing infection under both natural and artificial conditions.

P. S. W.

The Late Sir John M'Fadyean

We have received the following further tribute to the memory of Sir John M'Fadyean, from Lt.-Col. T. Dunlop Young, O.B.E., M.R.C.V.S., D.V.S.M., F.R.S.I., late Veterinary Superintendent, Metropolitan Cattle Market, Smithfield, E.C.

The passing of Sir J. M'Fadyean has, doubtless, caused deep feelings of regret to all who had the honour to know him. Many tributes will be paid to his great abilities and wonderful career by those better able to do so than I, but the paragraph in the last part of Sir M. Burrell's tribute in the *Veterinary Record* prompts me to place on record one of Sir John's many kindnesses to me.

Due to the death of my dear father when I was about to enter the "Dick" College I had to earn my own living—which, for some time, I did as a butcher—and so my studies were delayed until later years. Through the kindness of the Corporation of the City of London I was allowed so to arrange matters that I could attend the lectures at Camden Town. Prior to beginning my scholastic career I had an interview with Sir John and had a shock when he kindly explained to me that it would be necessary for me to re-matriculate because since the date when I was about to enter "Dick's" the curriculum had been extended from three to four years and the entrance examination standard had also been raised. Seeing me disheartened he very gently and kindly said: "Generally students find it sufficiently difficult to pass all examinations at the first attempt even when they have nothing to do but study. For you to carry out your daily official duties and study at the same time will be a heavy task, but I, and the teachers here, will assist you in every way we can. You certainly have had what I consider a good preliminary training, *viz.*, at home, on the farm, with all classes of animals, pupilage with a veterinary surgeon, experience as a butcher and as a sanitary and meat inspector."

I re-matriculated and I will always remember with deep gratitude the kindness of Sir John and all the teachers.

On the day I obtained my M.R.C.V.S., he said: "Well done. If I can assist you in future come to me."

Within a few months the Corporation of the City of London resolved to appoint a veterinary officer as Chief Meat Inspector at Smithfield Market and through Sir John's kind assistance I was appointed.

It is a coincidence that the two gentlemen to whom I owe any success I attained in the sphere of meat inspection have, within a few weeks, passed away. I refer to Professors Ostertag and M'Fadyean: both rose to eminent positions through sheer hard work; both had rather austere personalities, but hearts of gold, and I had the great honour of having both as friends whose memories will ever be dear to me.

Such is only one of the examples of Sir John's quiet, unassuming kindness to one member of our profession.

* * * * *

Sir John M'Fadyean Memoir—Erratum.—In the section of the memoir appearing in our last issue (*V.R.* **53**. No. 9.), under Research: (8) *South African Horse Sickness* (page 130, col. 1, lines 29-33), for "The discovery of a virus as the cause of horse sickness represented the second discovery of an animal disease of virus origin, the first being that of foot-and-mouth disease *in the preceding year*," read (for italicised words), "*three years previously* (namely, by Löffler and Frosch in 1897).

[M'Fadyean had reproduced Löffler and Frosch's reports extensively in his journal in 1899, *J. Comp. Path. and Ther.*, **12**, 79 and 93."]

IN PARLIAMENT

The following are among questions and answers recently recorded in the House of Commons:—

Foot-and-Mouth Disease

Lieut.-Colonel Sir Thomas Moore asked the Minister of Agriculture whether, in view of the shortage of meat, it is still regarded as essential to slaughter not merely all animals affected by foot-and-mouth disease, but also those which have come into contact with such affected animals?

Mr. Hudson: Yes, Sir, but I would remind my hon. and gallant Friend that it is only the carcases of animals affected with the disease which are destroyed. The remainder are salvaged for human consumption.

Sir T. Moore: Is my right hon. Friend aware that there is a substantial divergence of opinion in this country regarding the whole idea of this policy and in foreign countries as regards the practice of the policy? In view of the shortage of food, does not my right hon. Friend think that even in the carcases that are destroyed there may be some parts useful for food?

Mr. Hudson: The overriding balance of informed opinion in this country is in favour of the policy as carried out.

. . . . .

Milk

Mr. David Adams asked the Minister of Health whether he is aware that the Medical Officer of Health for Northumberland states that the position regarding milk generally throughout the county is unsatisfactory; that of 112 registered cow-keepers in the Castle Ward Rural District, Northumberland, a few only have cowsheds which comply with the Ministry's standard, and that this is representative of the county generally; and what steps he proposes to protect the public against the risks of milk produced under such conditions?

The Parliamentary Secretary to the Ministry of Health (Miss Horsbrugh): As my hon. Friend will be aware, the enforcement of the provisions of the Milk and Dairies Order relating to methods of production is a matter which is in the hands of the appropriate local authorities. My right hon. Friend will, however, cause inquiries to be made into the case to which my hon. Friend refers in order to see if there is any action which he can usefully take.

Mr. Adams: Is the hon. Lady aware that it is from these farms that dangerous milk is produced, that veterinary inspection is not obligatory and that thousands of cows have never been inspected by a veterinary officer?

Miss Horsbrugh: I think my hon. Friend is going further in what he suggests than can be done under our present legislation, but my right hon. Friend is making inquiries in the particular case which he has in mind.

H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned has been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at Hotel Lindum, St. Anne's, Lytham St. Anne's, Lancs.

	Price net s. d.	*Post free* s. d.
Statutory Rules and Orders, 1941:		
199. Livestock (Restriction on Slaughtering) (No. 2) Order, 1940. Amendment Order, February 17th, 1941	0 1	0 2

* * * * *

The address of the National Horse Association of Great Britain and the National Pony Society has been changed until further notice to 35, Wymond Street, Putney, London, S.W.15.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 10th.—Meeting of the N.V.M.A. Committee on Tuberculin Tests at 36, Gordon Square, 11.30 a.m.

Mar. 11th.—Meeting of the N.V.M.A. Finance and General Purposes Committee, Royal Station Hotel, York, 2.30 p.m.

Mar. 11th.—Meeting of N.V.M.A. Survey Committee, Royal Station Hotel, York, 8 p.m.

Mar. 11th.—Meeting of the R.C.V.S. Examination Committee, Royal Station Hotel, York, 5.15 p.m.

Mar. 12th.—Meeting of the R.C.V.S. Finance Committee, 10 a.m., Registration Committee, 11 a.m., R.C.V.S. **Council**, 2 p.m., all at the Royal Station Hotel, York.

Mar. 15th.—Annual General Meeting of the North of England Division, N.V.M.A., at King's College, Newcastle-upon-Tyne, 11.15 a.m. Annual Luncheon in the University Union, 1.15 p.m.

* * * * *

N.V.M.A. Scheme for the Control of Some Diseases of Cattle

From information which has reached us it appears that many members of the Association are unaware of the publication of the Scheme put forward by the N.V.M.A. Survey Committee for carrying out the recommendations contained in Section I of the Report on the Diseases of Farm Livestock. This plan was embodied in the proceedings of the Quarterly Meeting of Council, N.V.M.A., published in the supplement to the issue of the *Veterinary Record* of January 25th. The Report itself (Section 1) was reproduced in our issue of January 4th.

In view of the fact that the Report and Scheme are of momentous importance and that the fate of the latter may well materially influence the future activities of a large number of veterinarians, members are earnestly requested to read and study them carefully, and, wherever possible, to attend divisional meetings and take part in the discussion.

* * * * *

R.C.V.S. OBITUARY

Armstrong, Edwin, 3, Upton Road, Newport, Mon. Graduated Edinburgh, May 19th, 1909. Died February 22nd, 1941, aged 55 years.

The Late Mr. F. B. Pearson, M.R.C.V.S.

Mr. Frank Bernard Pearson, of 2, Highfield Avenue, Chesterfield, whose death was recorded with regret in our last issue, was the youngest son of the late Mr. Theophilus Pearson, of Abercrombie Street, Chesterfield, who was Mayor of Chesterfield in 1878, and was head of the Whittington Potteries. After graduating at the "Dick" College he assisted Mr. Rawlins, veterinary surgeon, Chesterfield, and carried on the partnership with his son after his death. For some time Mr. Pearson was veterinary surgeon under the Chesterfield Borough Council. He was veterinary surgeon to the Barlow Hunt and was himself a keen rider to hounds. He won silver trophies in hunter classes at agricultural shows in the district.

Mr. Pearson, who had been in ill-health for eight years, at one time had an extensive practice, his genial manner and his keenness rendering him a popular practitioner. Some years ago he retired from active practice, and for some time carried on the Newbold Farm belonging to the Whittington Potteries. Of late he has been living in retirement. Mr. Pearson was a member of the Hardwick Lodge of Freemasons and was W.M. in 1906.

GENERAL OBITUARY

Sir Frederick Banting

Great regret has been occasioned by the news that Sir Frederick Banting, K.B.E., F.R.S., the discoverer of insulin and Professor of Medical Research in the University of Toronto, has been killed in an air accident in Newfoundland. After serving in the last war, Professor Banting commenced research work on the internal secretion of the pancreas in 1921. His discovery of insulin was reported in the following year, and its preparation soon became a world-wide branch of the chemical industry. He received honorary degrees from many universities and became an Honorary Fellow of the Royal College of Surgeons and of the Royal College of Physicians. In 1923 he was awarded the Nobel Prize for medicine.

* * * * *

FOOT-AND-MOUTH DISEASE IN IRELAND

The outbreak of foot-and-mouth disease in Ireland had, at the beginning of the month, assumed a very serious aspect. In Eire a standstill order was in operation in eight counties and there were restrictions in 16 counties—half the country. These restrictions included the prohibition of hunting, coursing and dog racing and the holding of fairs and markets. Golf clubs in some areas, including Dublin, which was badly hit, had closed the courses.

* * * * *

FEEDING-STUFFS TO BE REDUCED

The unit value of the feeding-stuffs ration coupons is to be reduced on April 1st to one half-cwt., instead of 1 cwt. as at present. Steps will be taken by the issue of additional supplementary coupons, to mitigate the effect of this reduction to the dairy herd, working horses, and approved pedigree animals and selected poultry stock. Farmers selling home-grown grain will receive sufficient coupons to give replacement on a ton for ton basis.

* * * * *

Rations for Heavy Horses

The Shire Horse Society has received a letter from the Ministry of Agriculture stating that the county agricultural executive committees have now been informed that additional allocations of the rationed feeding-stuffs may be granted to stallions of the heavy breeds so as to bring the total allowance up to 5 cwt. per month for Shires and Suffolks, and up to 3 cwt. per month for Clydesdales and Percherons. The committees must take account of cereals in the applicant's possession. A travelling stallion's keep, it is pointed out, should be sent with the animal.

* * * * *

SWINE FEVER IN ESSEX

At a meeting of the Essex Diseases of Animals' Sub-Committee at Chelmsford, it was stated that a conference had been held on the high incidence of swine fever, at which Ministry of Agriculture and police representatives were present. The conference recommended that the Minister of Agriculture be urged to amend the Swine Fever Order, 1938, in order to require the immediate putting into force of a standstill order over a considerably wider area than the area of the premises on which a suspected outbreak of swine fever was reported. The recommendation was approved for submission to the Ministry of Agriculture.

* * * * *

Those Cowing Forms.—A "Peterborough" paragraph in the *Daily Telegraph* runs as follows: "At a recent meeting of local millers and corn chandlers in Exeter an official form was produced giving details of the rationing of cattle foods. Among the various classes of livestock were included 'Bulls, two years, and Bulls, under one year—Male and Female.'"

CLYDESDALE HORSE SOCIETY

At a meeting of the Council of the Clydesdale Horse Society of Great Britain and Ireland it was decided to offer the Glasgow Agricultural Society the Cawdor Cup for stallions for competition at the forthcoming show to be held at Scotstoun on March 5th and 6th. It was also decided to give a grant of £100 towards the prize money.

It was intimated that 104 new members were enrolled up to December 31st last, making a total of 3,049, an increase of 29 during the year.

The Council agreed to recommend to the general meeting in March that the present office-bearers be re-elected: President, J. E. Kerr, of Harviestoun; Vice-President, John R. M'Call, M.R.C.V.S., Glasgow; and Hon. Treasurer, Alexander Murdoch, C.A., East Hallside, Newton.

* * * * *

MINISTRY OF AGRICULTURE NEWS SERVICE

Advice to German Farmers: Four Maxims by their Minister of Agriculture for Increased Production.—Herr Darre, whatever his political opinions may be, has been a good Minister of Agriculture for Germany. Long before the present war he was exhorting the farmers of his country to grow more of their own feeding-stuffs, in the interests of the health and fertility of the soil and of good husbandry. In 1939 his efforts raised German milk production by 10 per cent. above 1938. He claims (this may or may not be true) that in the last few months of 1940 milk production rose a further 10 to 15 per cent. above the figure for the corresponding months of 1939.

He has given German farmers a few simple maxims. First he puts the soil. The important factors for maintaining its fertility, he says, are a regular water supply, expert management to conserve humus, careful tillage, a satisfactory amount of lime and adequate manuring. But healthy, fertile soil can only produce the large crops expected of it if those plants are grown that are able to take full advantage of it, and in applying his remarks especially to potatoes he recommends the use of certified seed and a regular change of it. He places third the increased production of root crops, despite the wartime difficulties of the labour they involve. Fourthly, he asks for the planting of more of other fodder crops to ensure the success of the milk campaign. "This aim," he said, "will never be achieved by increasing the proportion of the area under fodder crops, but by increasing the output per acre and by improving the quality of the crops. For this reason catch crops will be of particular importance during the coming year as an additional source of fodder."

It is worthy of note that the present system of marketing in Germany was based on our Agricultural Marketing Act, 1931.

* * * * *

LIVESTOCK MARKETING SCHEME REVIEWED

The Government's livestock marketing scheme has now been in operation for more than a year, and its working during that period was surveyed by Mr. H. S. E. Turner, Director of the scheme, in an interview with a representative of the *Farmers' Weekly*. Mr. Turner stated that there had been no fundamental alterations to the scheme since it started on January 15th last year and it had worked well, though there must be some hitches in an organisation which handles meat—both foreign and home-killed—valued at £200 million pounds yearly. Approximately 30,000 people all over the country collect and distribute this huge amount which goes to over 40 million people.

A major difficulty was transport, which got more difficult every day, and it was necessary to take livestock from one part of the country to the other to level out supplies. "It is in this that the farmers can give us most help," said Mr. Turner, "Last week we had to threaten farmers that their stock would not be taken if they failed to send in the number of animals entered by them. It is obvious that by failing to do their part in this way, it affects the whole scheme. If one collecting centre fails to yield its quota of animals, it means that we have to rearrange allocations. This means extra transport—not only the cartage of animals from other centres, but also wastage of the existing facilities which are sent to the collecting centres to pick up stock already entered."

Reduction in Slaughterhouses

After stating that he considered the grading was remarkably good, Mr. Turner continued: "Another thing which we have done is to reduce the number of slaughterhouses from approximately 12,000—16,000 to 830. This was opposed in some quarters and a number of applications were made for slaughterhouses to be reinstated. The result was that up to January 31st the independent committees set up for the purpose had to deal with 37 cases. In only two cases were the applications granted.

"This centralisation of the slaughterhouses has also led to the better use of products usually wasted when animals are killed. For instance, we are utilising fats to the utmost. In pre-war days much of this fat was lost—an important point in war-time. Also 95 per cent. of the tripes available are now being used and we are also making great use of the pharmaceutical glands obtained from the animals slaughtered. The majority of these were, before the war, obtained from overseas. Another point, and this is important to farmers, is the preservation of the blood. Under the Ministry's scheme it is possible to save most of this and to dry it as a fertiliser and also for use in feeding-stuffs.

"I might add that we do not claim to do these things better than the large abattoirs of pre-war, but we do save more of these products than the small slaughterhouse of the country butcher.

"The approximate cost of killing one beast in a Government slaughterhouse at the present time is 7s. 9d., a figure which is slightly less than that shown by pre-war abattoirs."

* * * * *

FERTILITY IN FLEMISH AND SMALLER TYPES OF RABBIT

"The Flemish Giant is the largest breed of rabbit and at first sight it would appear to be the most important breed for meat production," writes W. King Wilson, of the Harper Adams Agricultural College, in the November 30th issue of *Nature*. "In practice, however, there is a relative scarcity of breeders who persevere with studs of typical Flemish. (It is essential to distinguish between typical Flemish, as described in the standard, and the many crosses which are often loosely described as "Flemish." The reasons appear later.) The standard for the Flemish Giant[1] specifies a large animal of steel-grey colour with white belly fur. No other colour is recognised in Great Britain; but in other countries a wider range is admitted. For show purposes the standard weights of adults are: bucks 11 lb. or more, and does 12 lb. or more; in "intermediate classes" they must be less than the above weights. Whilst allowing for difficulties in securing great size and weight, together with all the other points required in show stock, the fact that there are not more breeders of a rabbit of this size suggests that there must be some underlying drawbacks.

"Flemish Giants represent remarkable development and size improvement over the wild ancestor, amounting to some 300 to 500 per cent. increase in weight over the original stock. It has been pointed out that the higher the level of production the greater the strain in maintaining that level[2], and finer adjustments are needed at the

(1) Standard. Flemish Giant Rabbit Club, London.
(2) Wilson, W. King, and McCartney, W., "Rabbit Feeding for Meat and Fur." Imperial Bureau of Animal Nutrition, Aberdeen, Technical Communication No. 12. (1940.)

higher plane of nutrition. Furthermore, large breeds tend to have more young to the litter than small breeds[3,4]. Great size and weight though heritable are, unfortunately, not due to a single dominant factor, but are due to multiple factors[5,6,7,8]. This large size is of national importance for meat production in war-time. The fur colour of Steel Flemish, was not found to be so difficult to produce as earlier investigators had indicated from work with other varieties of steel rabbits [9, 10, 11, 12, 13, 14]. The pelt is practically as large as that of the silver fox animal.

"One of the difficulties of producing typical Flemish Giants is that they often tend to be slothful and difficult to mate when kept on the usual mixed ration. Close inbreeding for five generations was reported to have resulted in complete sterility[6]; but similar results also occurred with an inbred small breed. Hammond has published the histories of sterile Flemish bucks and does and has fully described their histological condition[15]. Some individuals are particularly troublesome, but may sometimes be assisted by appropriate handling. This disinclination to copulate, and the number of infertile matings, is very marked by comparison with the smaller and intermediate breeds. Both the latter are much more popular with breeders.

"During last winter the severe frosts prevented the use of green foods for approximately two months (January and February) and roots were generally too frosty for use. Over a period of eight weeks the stock received an average of only one feed of roots or beet pulp weekly. It should therefore be interesting to compare the fertility of Flemish and smaller breeds during this and the immediately ensuing breeding season.

Experimental

"The stock was divided into three main groups comprising (*a*) Flemish and first cross Flemish does; (*b*) brown Beveren type does; and (*c*) Dutch does. There were 32 to 34 matings, or attempted matings—by putting the doe to the buck—in each group. Fertility of does in the different breeds is shown below:

Table 1. Fertility of Flemish and Smaller Types

Breed	Flemish	Flemish first cross	Combined	Beveren type	Dutch	Total
No matings attempted	21	13	34	34	32	100
No. litters	9	12	21	31	28	80
Per cent. fertile	42·86	92·31	61·76	91·18	87·50	80·00

(3) Pickard, J. N., "A Preliminary Study of Some of the Factors Influencing the Duration of Pregnancy and Litter Size in the Rabbit," IVth World's Poultry Congr. Papers, Section F, 901. (1931.)

(4) Rosahn, P. D., Greene, H. S. N., and Hu, C. K., *Proc. Soc. Exp. Biol. and Med.* 31. 1214. (1934.)

(5) Punnett, R. C., and Bailey, P. G. *J. Genet.* 8. 1. (1918.)

(6) Pease, M. S. *J. Genet.* 20. 261. (1928.)

(7) Castle, W. E., "Size Inheritance in Rabbit Crosses," Carnegie Inst., Washington, Pub. No. 320, 3. (1922.)

(8) Wilson, W. King, *J. Heredity.* 27. 127. (1936.)

(9) ——, "Alternative Modes of Inheritance of Steel Grey Coat Colour in Rabbits," VIIth Internat. Genet. Congr., Section D, 1939.

(10) Punnett, R. C., *J. Genet.* 2. 221. (1912.)

(11) ——, *J. Genet.* 5. 37. (1915.)

(12) ——, *J. Genet.* 23. 265. (1930.)

(13) Pap, E., *Z. Induktiv. Abstammungs- und Verebungs-lehre.* 26. 185 (see 14). (1921.)

(14) Onslow, H., *J. Genet.* 12. 91. (1922.)

(15) Hammond, J., "Reproduction in the Rabbit" (Edinburgh: Oliver and Boyd, 1925).

"The fertility was good in Beverens (91 per cent.) and Dutch (88 per cent.), the latter's average being reduced by one doe which required three matings to become fertile. The well-bred typical Flemish stock gave a very poor level of fertility (43 per cent.); but in striking contrast to this the first cross Flemish does were practically always fertile, with twelve litters from thirteen matings, or 92 per cent. The F_1 does consisted of seven matings from large × large type (Flemish × Belgian) does, which produced six litters; and six matings of large × small type (Flemish × Tan) does which produced six litters. Thus it appears that the type to which the Flemish is crossed is immaterial, and regardless of the size of breed used for the outcross the F_1 show remarkable improvement in fertility over typical Flemish stock.

"The average litter size from these different groups did not provide any large differences in the number of young:

Table 2. Litter size from Flemish and Smaller Types

Group ...	Flemish	Flemish first cross	Combined	Beveren type	Dutch
No. of litters	9	12	21	31	28
Average number of young ...	5·22	5·08	5·14	5·19	5·43
Range ...	2-11	1-8	1-11	2-8	1-9

"The litter size for Flemish was lower than usual, although the largest litter (eleven) was produced by this breed. The average for F_1 does was also lower than expected; the Flemish × Belgian was only 4·50, whilst the Flemish × Tan was 5·67 per litter. The Flemish had the greatest range of litter size, and the Beveren had the narrowest, as shown in Table III. The Dutch maintained a good average, for their size, at 5·43 per litter, which is explained by 19 of these litters being from outcrosses averaging 5·58, whilst the average from Dutch × Dutch matings was 5·11. The range for Dutch × Dutch litters was four to seven but was more than doubled when outcrossed, ranging from one to nine young, which, surprisingly, is greater than from the larger type does from the Flemish outcrosses.

Table III. Distribution of Litter Size by Breed

Litter size	Flemish	Flemish first cross	Combined	Beveren type	Dutch	Total
1	–	1	1	–	1	2
2	1	2	3	2	1	6
3	2	1	3	3	–	6
4	–	–	–	5	7	12
5	4	2	6	5	5	16
6	–	2	2	6	6	14
7	–	1	1	8	5	14
8	1	3	4	2	2	8
9	–	–	–	–	1	1
10	–	–	–	–	–	–
11	1	–	1	–	–	1
Total	9	12	21	31	28	80

"A guide to the weight of different groups of does is taken from their live weights during lactation at approximately the time when the young began to leave the nest: Flemish, 9 lb. 6 oz.; Flemish and first cross, 8 lb. 13·13 oz. (Flemish × Belgian, 8 lb. 11·67 oz., and Flemish × Tan, 7 lb. 3·00 oz.); Beveren, 7 lb. 0·47 oz.; Dutch, 4 lb. 14.00 oz. It will be seen that popular varieties of fur and fancy breeds bred more freely than giants. Furthermore, after weaning, the small types were ready for further

breeding sooner, and more readily, than large heavy animals.

Conclusion

"The Flemish Giant is the largest breed of rabbit, but it is slothful and more difficult to breed than either the medium-sized fur breeds or the small fancy breeds (for example, Beverens and Dutch), when fed and managed under similar conditions.

"First crosses from Flemish were fertile, irrespective of whether the cross was to large or to small breeds.

"After an abnormally severe winter, which resulted in changes of diet, the average litter size of larger types was lower than expected and nearer the level for small breeds.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

"REMOVING A CAUSE OF COMPLAINT"

To the Editor of the Veterinary Record

Sir,—I would crave a little space to answer the letter of Mr. E. P. Edwards in your issue of February 22nd, in reply to mine of February 8th.

He first of all enlarges on the point that the College courses provide little field experience. That, I maintain, is not altogether accurate. We must have had at least six months of large-animal practice and have seen, as a minimum, six cases of parturition before sitting our Finals. In practically all cases I am sure, as in my own, students do not merely "look on" as medicals do, but actually take a hand in the operation. That negatives Mr. Edwards' parallel between medical and veterinary students.

Again, Mr. Edwards refers to some young graduates feeling that they are not worth a salary; that, mark you, after a five-year course of intensive study, and after having been passed out as "fully qualified to practise the art and science of veterinary surgery and medicine." Speaking for Scottish veterinary surgeons, at all events, I certainly do know there are few in the category referred to by your correspondent.

Further, I would like to correct Mr. Edwards' statement about medical graduates being only too eager to "walk the hospitals" without remuneration. I shall cite Glasgow as a typical Scottish case. Here, men fresh from this University receive £50 and £100 annually according as they are in voluntary or corporation hospitals, board inclusive in both cases. There they get their *only* practical experience before setting up in practice for themselves. Some, of course, go straight as assistants to other practitioners and probably, as Mr. Edwards would say, the latter have "to endure the anxiety of the mistakes they may make, sometimes with costly results."

Despite Mr. Edwards' attempt to bolster up the case of those veterinary surgeons who would sell themselves for a "mess of pottage," believe me, Sir, there are countless qualified men who, like the present writer, are grateful to you for the stand you have taken on this question. The numerous communications I have had, thanking me for raising the matter in the *Veterinary Record*, are ample testimony to that.

Yours faithfully,
Aubrey V. Melville.

35, Arundel Drive,
Glasgow, S.2.

February 22nd, 1941.

DISEASES OF ANIMALS ACTS, 1894 to 1937, and AGRICULTURE ACT of 1937 (PART IV)

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 31st Jan., 1941	27	29*	29	3,900	1	4	23	110	68
Corresponding period in									
1940	34	42	1	66	1	3	13	152	77
1939	55	58	11	1,635	7	12	61	64	44
1938	38	40	43	5,341	10	10	22	22	12
Total 1st January to 31st Jan. 1941	52	55	51	5,431	1	4	45	250	111
Corresponding period in									
1940	55	64	5	624	5	9	36	342	184
1939	92	97	22	3,531	8	13	83	106	72
1938	89	91	75	9,981	16	20	52	38	23

Note.—The figures for the current year are approximate only. §Excluding outbreaks in Army Horses.
*2 of these animals refer to an outbreak confirmed prior to January 16th, 1941.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.* herds officially certified as free from tuberculosis, as at 31st January, 1941, was as follows:— England 3,830 ... Wales 9,283 ... Scotland 3,281 ... Total (Great Britain) 16,331